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BITTERBRUSH SEEDLINGS DESTROYED BY CUTWORMS AND WIREWORMS[1]

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Cutworms and wireworms constitute a real threat to the success of bitterbrush (Purshia tridentata) reseeding in northeastern California. These insect larvae have damaged and killed large numbers of seedlings in small scale experimental plantings in Modoc, Lassen, and Inyo counties since 1952.

Reports from the Intermountain region have indicated that grasshoppers are the only insects causing enough damage to bitterbrush seedlings to require control measures.[2] Grasshoppers have caused some damage in northeastern California, but it has been light compared to the activities of cutworms and wireworms.

Cutworms damage the seedlings by feeding on the cotelydons of emerging or newly emerged seedlings. They often consume the entire seedling. They also chew through the stems and feed on the roots. Wireworms damage only the root systems of the seedlings. Most of the damage occurs during or soon after seedling emergence and before the plants develop woody tissues.

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[1] Contribution from cooperative investigation between the California Forest and Range Experiment Station and the California Department of Fish and Game. Work was done under Federal Aid in Wildlife Restoration Act, Pittman-Robertson Research Project W51R, entitled "Game Range Restoration."

[2] Holmgren, Ralph C. Progress report for 1953; cooperative research program for revegetating the deer winter ranges on the Payette and Boise river drainages. U. S. Forest Service, Intermountain Forest and Range Expt. Sta. 12 pp. 1954. (Processed).

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Cutworms have been observed feeding on germinating seed, and wireworms may, too, although they have not been seen doing so. The percentage of germinating seeds affected and the extent to which seedling emergence may have been reduced has not been determined.

The heaviest worm damage was observed in 1956 at the Doyle Experimental Area in Lassen County, California, about 40 miles north of Reno, Nevada. Ninety eight percent of the seedlings emerging in the spring of 1956 from seed planted in the fall of 1955 were destroyed. Ninety percent of this mortality was caused by cutworms and wireworms. Mortality due to these worms was less during the earlier years at Doyle and during all years at the other sites but reduced planting success a good deal.

A variegated cutworm (Lycophotia margaritosa), is believed to have caused most of the damage in northeastern California. It is the most important and commonest species throughout the West. Mature larvae are 40 to 45 mm. long, variable in color but usually gray or brown mottled above with oblique gray areas on the sides. The adult moths are grayish brown with dark mottled forewing, a brassy lustre, and a wing expanse of 40 to 45 mm.3/

Wireworms (Elatridae) are long, slim, cylindrical, hardshelled "worms" with feebly developed legs. They are the larvae of click beetles, which can be easily recognized by their ability to flip several inches into the air when turned on their backs.4/

Damage by cutworms and wireworms probably can be controlled by insecticide treatments of the soil or seed. Research is needed on inexpensive and workable methods of control.

3/ Essig, E. O. Insects of North America. New York, N. Y. 1035 pp., illus. 1926.

4/ Keen, F. P. Insect enemies of Western forests. U. S. Dept. Agr. Misc. Publ. 273. 210 pp., illus. 1938 (Rev. 1952.)